Synthesis and immunomodulatory functions of microbial and endogenous glycoconjugates

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Various glycoconjugates of cell membrane activate the immune system via interaction with host's innate immune receptors, lipid antigen presenting proteins, and antibodies. We have established the synthetic methods for glycolipid compound library with structural variation of lipid moiety, including glycosylphosphatidylinositol (GPI) and sphingoglycolipids (SGL).

Based on our previously developed methods of GPI related structures [1], we performed the synthesis of mannosyl inositol phospholipids such as Ac_1PIM_1, a potential biosynthetic intermediate for phosphatidylinositol mannosides (PIMs) from *Mycobacterium tuberculosis*, and then demonstrated that the compounds is the key entity of a DCAR (a member of C-type lectin receptors) agonist among PIM molecules [2]. As for the SGLs, based on our previous convergent synthesis of GalCer derivatives [3], we have synthesized various related SGL structures, and analyzed the immunomodulation via Mincle and also via lipid antigen presentation.

Bibliographic references:

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